

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/630,751
Attorney Docket No.: Q71391

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claim 1. (currently amended): A magnetic recording medium having a nonmagnetic substrate on which is provided at least a soft magnetic under-film, an orientation control film that is in direct contact with the soft magnetic layer and controls an orientation of a film directly above, a perpendicular magnetic recording film having an axis of easy magnetization oriented to be mainly perpendicular to the substrate, and a protective film, wherein the orientation control film is an alloy containing at least Cr and C, wherein the film that is directly above is the perpendicular magnetic recording film and is in direct contact with the orientation control ~~layer~~film.

Claim 2. (original): The magnetic recording medium according to claim 1, wherein the orientation control film has a C content that is not less than 10 at% and not more than 80 at%.

Claim 3. (original): The magnetic recording medium according to claim 1, wherein the orientation control film has a C content that is not less than 30 at% and not more than 70 at%.

Claim 4. (original): The magnetic recording medium according to claim 1, wherein the orientation control film has a Cr content that is not less than 3 at% and not more than 80 at%.

Claim 5. (original): The magnetic recording medium according to claim 1, wherein the orientation control film has a thickness that is not less than 0.5 nm and not more than 20 nm.

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Claim 6. (original): The magnetic recording medium according to claim 2, wherein the orientation control film has a thickness that is not less than 0.5 nm and not more than 20 nm.

Claim 7. (original): The magnetic recording medium according to claim 1, wherein the perpendicular magnetic recording film is formed of a material containing at least Co and Pt.

Claim 8. (original): The magnetic recording medium according to claim 2, wherein the perpendicular magnetic recording film is formed of a material containing at least Co and Pt.

Claim 9. (previously presented): A method of manufacturing the magnetic recording medium according to claim 1, comprising carrying out, in order, at least a step of forming a soft magnetic under-film on a nonmagnetic substrate, a step of forming an orientation control film that controls an orientation of a film directly above, a step of forming a perpendicular magnetic recording film having an axis of easy magnetization oriented to be mainly perpendicular to the substrate, and a step of forming a protective film.

Claim 10. (previously presented): A method of manufacturing the magnetic recording medium according to claim 2, comprising carrying out, in order, at least a step of forming a soft magnetic under-film on a nonmagnetic substrate, a step of forming an orientation control film that controls an orientation of a film directly above, a step of forming a perpendicular magnetic recording film having an axis of easy magnetization oriented to be mainly perpendicular to the substrate, and a step of forming a protective film.

Claim 11. (original): A magnetic recording and reproduction apparatus comprising the magnetic recording medium according to claim 1 and a magnetic head that records and

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reproduces information on the magnetic recording medium, wherein the magnetic head is a magnetic monopole head.

Claim 12. (original): A magnetic recording and reproduction apparatus comprising the magnetic recording medium according to claim 2 and a magnetic head that records and reproduces information on the magnetic recording medium, wherein the magnetic head is a magnetic monopole head.

Claim 13. (new): A magnetic recording medium having a nonmagnetic substrate on which is provided at least a soft magnetic under-film, an orientation control film that is in direct contact with the soft magnetic layer and controls an orientation of a film directly above, a perpendicular magnetic recording film having an axis of easy magnetization oriented to be mainly perpendicular to the substrate, an intermediate film between the perpendicular magnetic recording film and the orientation control film, and a protective film, wherein the orientation control film is in direct contact with the intermediate film which is direct contact with the perpendicular recording film, and the orientation control film is an alloy containing at least Cr and C.

Claim 14. (new): The magnetic recording medium according to claim 13, wherein the intermediate film is made from an hcp structure alloy and has a Co content that is not less than 30 at% and not more than 70 at%.

Claim 15. (new): The magnetic recording medium according to claim 13, wherein the intermediate film has a thickness that is not more than 30 nm.

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Claim 16. (new): The magnetic recording medium according to claim 13, wherein the orientation control film has a C content that is not less than 10 at% and not more than 80 at%.

Claim 17. (new): The magnetic recording medium according to claim 1, wherein the orientation control film has a C content that is not less than 30 at% and not more than 70 at %.